Hospitalization for pelvic inflammatory disease: a cost-effectiveness analysis

Smith K J, Ness R B, Roberts M S

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study evaluated the efficiency of hospitalising adolescents and young women, who had not previously given birth, for the treatment of mild to moderate pelvic inflammatory disease (PID). The authors concluded that a hospitalisation strategy was unlikely to be clinically or cost-effective. Although the study had some limitations regarding the input data selection and reporting, the use of data from adequately powered randomised trials supports the authors’ conclusions.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to evaluate the efficiency of hospitalising adolescents and young women, who had not previously given birth, for the treatment of mild to moderate pelvic inflammatory disease (PID).

Interventions
This was an extension of a previous analysis based on the PID Evaluation and Clinical Health (PEACH) study (Ness, et al. 2002, and Ness, et al. 2005, see ‘Other Publications of Related Interest’ below for bibliographic details). Out-patient management was compared with hospitalisation, for 18-year-old women, who had not previously given birth. An additional analysis was performed for 15-year-old patients.

Location/setting
USA/outpatient and inpatient care.

Methods
Analytical approach:
A state transition Markov model was constructed to simulate the study results for a 10-year time horizon. The authors reported that a societal perspective was considered.

Effectiveness data:
This study was based on a non-systematic literature review, and heavily based on the PEACH clinical trial (see Ness, et al. 2002, and Ness, et al. 2005). It evaluated three main scenarios regarding the potential benefits of hospitalisation, which were a 10%, 20%, and 30% reduction in PID complications.

Monetary benefit and utility valuations:
The utility values for the different health states were reported, along with their source. They were elicited using the Health Utility Index questionnaire and the source was a committee convened by the Institute of Medicine.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the measure of benefit and these were discounted at a rate of 3%.

Cost data:
The cost categories included the lifetime costs of chronic pain, infertility, and ectopic pregnancy, in-patient and out-patient PID treatment, tubo-ovarian abscess, and medication side effects. The sources were previous costing studies and economic evaluations. All costs were in 2004 US dollars ($) and a 3% discount rate was applied.

Analysis of uncertainty:
One-way, scenario, and probabilistic sensitivity analyses were performed, with 1000 iterations, and the distributions and ranges for these were described. The results were presented graphically as well as summarised in the text.

**Results**

The absolute costs and benefits were only presented graphically.

In the base-case scenario, which was a 10% complication reduction for hospitalisation, the incremental benefits with hospitalisation were 0.051 QALYs, at an incremental cost of $7,380, which produced an incremental cost-effectiveness ratio (ICER) of $145,000 per QALY.

In the 30% complication reduction scenario, the ICER decreased to $42,400 per QALY.

These results were robust in several one-way sensitivity analyses. The assumptions about chronic pelvic pain, which were based on expert opinion, strongly influenced the findings and the ICERs decreased as the time horizon for follow-up increased.

The probabilistic sensitivity analyses showed that, at a $50,000 willingness-to-pay threshold, there was a 1% chance of hospitalisation being cost-effective with a 10% benefit, a 44% chance with 20% benefit, and a 76% chance with 30% benefit.

**Authors' conclusions**

The authors stated that a hospitalisation strategy in young women, who had not given birth and who had mild to moderate PID, was unlikely to be clinically or cost-effective.

**CRD commentary**

**Interventions:**
The interventions compared seem to have been the most widely used strategies in managing this health problem. Few details were given about the comparators, and it would be necessary to consult Ness, et al. 2002, and Ness, et al. 2005, to decide whether these interventions are relevant to the reader's own setting.

**Effectiveness/benefits:**
Although no systematic review was undertaken, and the parameters and sources were not extensively described, the authors did state that they tried to bias the results towards hospitalisation (for example by assuming an unproven 10% benefit in the base-case, and also a low benefit for chronic pain). Thus, these results could be considered conservative. It is unclear whether a systematic search would have altered these results. The authors also stated that data from the main efficacy source might not be generalisable to all females at risk.

**Costs:**
The resource use categories and sources were reported, but few other cost details were given. Although the authors stated that a societal perspective was considered, it was not clear whether the patient costs or productivity costs were included.

**Analysis and results:**
As previously stated, a non-systematic review does not guarantee that the most appropriate data were used, but the authors seem to have used their best judgement for data selection. The impact of uncertainty was adequately assessed, and the level of reporting was adequate (the total costs and benefits of strategies were only graphically reported).

**Concluding remarks:**
Although the study had some limitations regarding the input data selection and reporting, the use of data from adequately powered randomised trials supports the authors' conclusions.

**Funding**
Supported by a grant from NIAID.
Bibliographic details

PubMedID
16794559

DOI
10.1097/01.olq.0000225321.61049.13

Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Adult; Cost-Benefit Analysis; Female; Hospitalization /economics; Humans; Markov Chains; Pelvic Inflammatory Disease /economics /therapy; Quality-Adjusted Life Years

AccessionNumber
22007000304

Date bibliographic record published
27/02/2007

Date abstract record published
10/06/2009